

Fabry-Perot Based Ranging Interferometer Receiver for High Spectral Resolution Lidar, Phase II

Completed Technology Project (2009 - 2013)



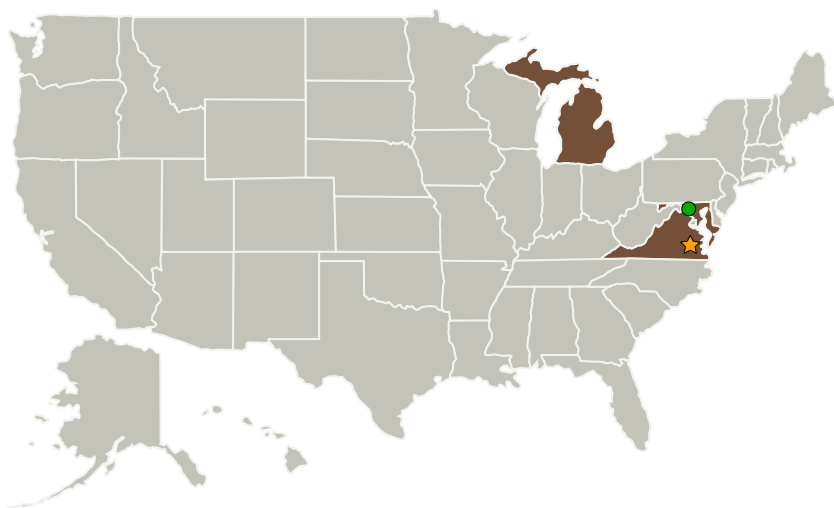
Project Introduction

Michigan Aerospace Corporation (MAC) is pleased to present the following Phase II proposal for a Fabry-Perot Based Interferometer Receiver for the High Spectral Resolution Lidar (HSRL) System. Under the Phase I work, MAC successfully developed instrument models and created a conceptual design for an aircraft-qualified receiver that can be used with the current HSRL collection optics.

Anticipated Benefits

This research is directly applicable to the highly-modular HSRL system at NASA Langley Research Center. Subsequent development of this work will result in a system that can validate and extend the current HSRL system. A 532nm implementation of this work will allow cross-validation of the HSRL and PET techniques, as well as add extended capability for temperature, density, pressure and line-of-sight (vertical) wind velocity estimation. The atmospheric measurement capabilities made possible through this research aids in military areas such as atmospheric mitigation for snipers, long-range gunnery and precision landing zones for manned and unmanned aircraft as well as meteorological monitoring to assist in Nuclear/Biological/Chemical (NBC) threat analysis and tracking. Non-military applications include clear-air turbulence sensing for commercial aircraft, meteorological monitoring of tropospheric and upper-atmosphere winds, and site selection and improved efficiency for wind farms.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland
Michigan Aerospace Corporation	Supporting Organization	Industry	Ann Arbor, Michigan

Primary U.S. Work Locations	
Maryland	Michigan
Virginia	

Project Transitions

 **March 2009:** Project Start

 **August 2013:** Closed out

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Gary C Jahns

Principal Investigator:

David Johnson

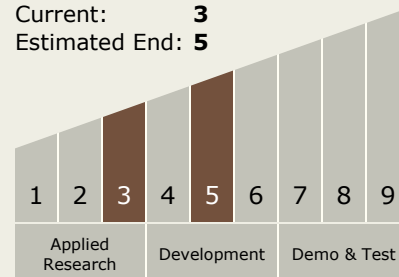
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Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **5**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.5 Lasers